Tension-type headache

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Tension-type headache is a neurological disorder characterised by a predisposition to attacks of mild to moderate headache with few associated symptoms. The diagnosis is based on the history and examination. Over the past few decades research on headache has centred on migraine, and much of the best quality evidence for the treatment of tension-type headache is decades old. Some consensus based treatment guidelines are available (see Additional Educational Resources box towards the end of this article). Treatment has changed little over the past two decades. Many patients self treat acute attacks and seek advice when attacks become frequent or chronic. This review focuses on how to identify and manage patients who require medical advice about acute attacks and preventive treatment to minimise further attacks.

What is tension-type headache?

Box 1 summarises the criteria for tension-type headache outlined in the second revision of the international classification of headache disorders, in which such headache is classified according to whether it is episodic or chronic and whether muscle tenderness is present.[1]

What causes tension-type headache?

The underlying cause of tension-type headache is uncertain. Activation of hyperexcitable peripheral afferent neurons from head and neck muscles is the most likely explanation for episodes of infrequent tension-type headache.[2] Muscle tenderness and psychological tension are associated with and aggravate tension-type headache but are not clearly its cause.[2] Abnormalities in central pain processing and generalised increased pain sensitivity are present in some patients with tension-type headache.[3] Susceptibility to tension-type headache is influenced by genetic factors.[4]

Who is at risk of tension-type headache?

The mean lifetime prevalence of tension-type headache in adults, based on pooled results from five population based studies, is 46% (range 12-78%).[5] Children are often affected, but prevalence peaks at age 40-49 years in both sexes.[6] The female to male ratio is about 5:4 and increases as headaches become more chronic. The prevalence of episodic tension-type headache increases with educational level.[7]

Chronic tension-type headache is less common, affecting about 3% of the general population but accounting for over half of those who have headache more than 180 days a year.[8] A substantial minority with tension-type headaches lost work time or had reduced productivity as a result of headache, leading to a considerable public health burden.[9]

How does tension-type headache present?

People with infrequent episodic tension-type headache are unlikely to seek medical advice. As the frequency of tension-type headache increases so commonly does the severity of the pain and the likelihood that the patient will present for treatment; younger patients are also more likely to consult.[10] Usually patients report a mild to moderate, bilateral sensation of muscle tightness or pressure lasting hours to days and not associated with constitutional or neurological symptoms. Patients may simultaneously describe and indicate the location of the pain (the "band around the head") (figure).

Patients with chronic tension-type headache are more likely than those with the episodic type to seek medical care. Often the patient has a history of episodic headache, but consultation is delayed until frequency and disability are high. In one study, two thirds of patients who presented with chronic tension-type headache had had daily or near daily headache for an average of seven years before consultation. Most continued to function at work or school, but performance was substantially impaired. Almost half had severe anxiety or depression, and affective distress predicted functional impairment.[10]

ONGOING RESEARCH

- Few new treatments for tension-type headache are in development. Primary headache disorders have received comparatively little attention from pharmaceutical and academic researchers relative to their prevalence and the disability they cause. The situation is perhaps worst of all for tension-type headache
- Nitric oxide synthase inhibitors are in clinical trials for migraine treatment and may eventually be tested in tension-type headache as well

Box 1 Diagnostic criteria for tension-type headache*

(A) At least 10 episodes fulfilling the criteria B-D:

(B) Headache lasting from 30 minutes to 7 days

(C) Headache has at least two of the following characteristics:

- Bilateral location
- Pressing/tightening (non-pulsating) quality
- Mild or moderate intensity
- Not aggravated by routine physical activity such as walking or climbing stairs

(D) Both of the following:

- No nausea or vomiting (anorexia may occur)
- No more than one episode of photophobia or phonophobia

(E) Not attributable to another disorder

Infrequent episodic tension-type headache

Diagnosed if headaches meeting the above criteria occur <1 day a month (<12 days a year) on average

Frequent episodic tension-type headache

Diagnosed if headaches occur >1 and <15 days a month (>12 and <180 days a year).

Chronic tension-type headache

Diagnosed if headaches occur ≥15 days a month (180 or more days a year).

*Adapted from the second revision of the international classification of headache disorders[1]

It can be difficult to distinguish tension-type headache from other causes of headache, especially migraine or headache disorders due to neck problems. Both migraine and tension-type headache have chronic forms, and, as headaches become more frequent, the characteristic features of migraine disappear and severity tends to decrease. The muscle tenderness of tension-type headache may involve the neck, leading patients and physicians to assume that some sort of disorder of the neck is the cause of the headache. Medication overuse headache also may present as a chronic daily or near daily pattern of relatively non-descript headache. The amount, type, duration, and frequency of medication use needed to cause overuse headache is not clearly established, and probably varies among individuals. The diagnosis should be considered in patients taking opioid or combination analgesics for an average of 10 or more days a month, or simple analgesics for an average of 15 or more days a month.[1 11]

Box 2 How to evaluate muscle tenderness in tension-type headache*

Pericranial tenderness is easily recorded by manual palpation by small rotating movements and a firm pressure (preferably aided by use of a palpometer) with the second and third finger on the frontal, temporal, masseter, pterygoid, sternocleidomastoid, splenius, and trapezius muscles. A local tenderness score from 0-3 on each muscle can be summated to yield a total tenderness score for each individual. It has been shown that, by using a pressure sensitive device that allows palpation with a controlled pressure, this clinical examination becomes more valid and reproducible. However, such equipment is not generally available to clinicians, and clinicians are advised to simply perform the manual palpation as a traditional clinical examination.

Palpation is a useful guide for the treatment strategy. It also adds value and credibility to the explanations given to the patient.

*Taken from the second revision of the international classification of headache disorders[1]

What examinations, tests, or imaging studies are useful?

If a patient meets the criteria for tension-type headache and has a normal result on neurological examination, further diagnostic testing generally is not helpful. Manual palpation of pericranial muscles is a valuable but underused physical examination technique: pericranial muscle tenderness on palpation is the most common abnormal finding in tension-type headache, although its absence does not rule out tension-type headache (box 2).[1] Careful funduscopic examination for papilloedema or other abnormalities is important for evaluating whether secondary headaches are present. Appropriate testing depends on the suspected diagnosis; a history of a "normal head scan" does not exclude all serious causes of headache. Box 3 lists some situations in which neuroimaging should be considered for non-acute headaches.

Who should be treated?

People with infrequent headache and good results from occasional use of non-prescription drugs do not need medical treatment, although some may want reassurance that this approach is reasonable. In general, medicine for acute headache should be used no more than two to three days a week; this is to minimise the chance that medication overuse or "rebound" headache will develop.[1 11] Medical treatment is indicated for patients whose intake of non-prescription drugs regularly exceeds this level because of the chance that medication overuse headache or other complications will develop.[11] Patients who are disabled by headache or whose frequency or severity of headache steadily escalates also need medical supervision. Whether treatment prevents or delays the transition from episodic to chronic tension-type headache is not known.

How should tension-type headache be treated?

Treatment for tension-type headache includes acute therapy for individual attacks and preventive treatment to minimise the number of attacks that occur. Acute and preventive treatment can be used together.

Individual headache attacks

Acute attacks of tension-type headache are usually treated with simple analgesics. Oral aspirin 500-1000 mg has the best evidence of effectiveness in randomised controlled trials. In one study, 75% of participants reported relief of headache two hours after aspirin and success was not affected by pain intensity at the time of treatment.[12] Other non-steroidal anti-inflammatory drugs also are effective, suggesting a class effect. Gastric irritation and occasionally ulceration may complicate treatment with aspirin or other non-steroidal anti-inflammatory drugs, even when they are used intermittently. Evidence for paracetamol (acetaminophen) from randomised controlled trials is mixed. It is probably more effective than placebo, but inferior to non-steroidal anti-inflammatory drugs.[12 13]

Randomised controlled trials show that combination drugs containing simple analgesics and caffeine are also effective for acute treatment of tension-type

Box 3 Recommendations for neuroimaging

According to guidelines issued by the European Federation of Neurological Societies, neuroimaging for non-acute headache is warranted in the situations (evidence from observational studies or methodologically weak randomised trials) listed below.

- Atypical pattern of headaches
- History of seizures
- Neurological signs or symptoms
- Symptomatic illness such as acquired immunodeficiency syndrome, tumours, or neurofibromatosis

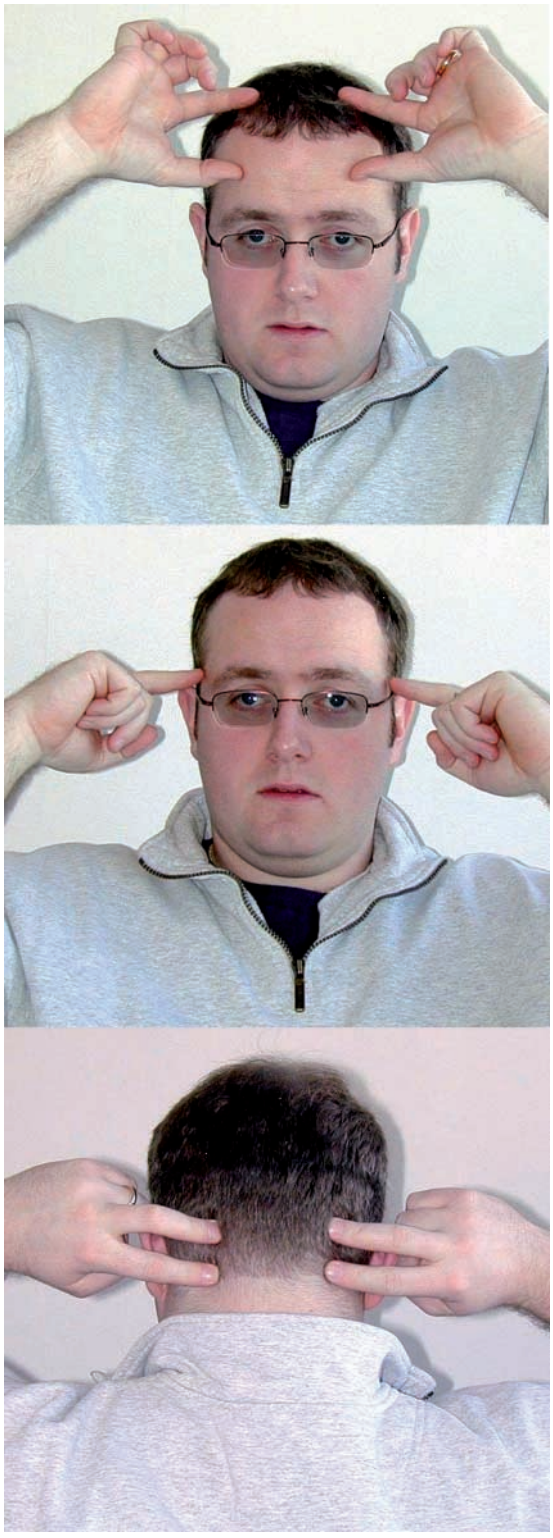
headache.[14-16] Many drugs used for acute treatment of tension-type headache are available to patients without a prescription, making it difficult for the doctor to monitor use.

Opioids or sedative hypnotics should not be used routinely to treat tension-type headache because they impair alertness and are common causes of overuse and dependence syndromes.[17] Evidence from case-control and cohort studies shows that opioids increase the risk of chronic headache.[18-20] Once established, all forms of medication overuse are difficult to treat, and recidivism is common.[11] Clinical vigilance to prevent medication overuse is among the most important responsibilities of the doctor caring for a patient with headache.

Preventive treatment

Daily preventive treatment should be considered for patients with frequent headaches or who respond poorly to abortive treatment (pain reducing treatment) alone. The risk of developing more frequent headaches over time is confined principally to patients with at least two headaches a month, and the risk increases exponentially once headaches are weekly, suggesting that preventive treatment should be considered at or before this point.[20] Clinical experience and evidence from case series and cohort studies suggest that the benefit of preventive treatment is diminished when patients are simultaneously overusing abortive treatments. In most cases, withdrawal of medication is advisable before starting preventive treatment.

The best evidence of effectiveness from randomised controlled trials is for amitriptyline, usually in doses of 75-150 mg a day. In addition to its effects on pain, amitriptyline decreases muscle tenderness.[21] Its effect is augmented by the addition of relaxation or tizanidine.[22 23] Amitriptyline also is effective for migraine prophylaxis, making it a good choice for patients who have both forms of headache.[24] Common side effects of amitriptyline include dry mouth, sedation, constipation, and blurred vision. Weight gain is the most common side effect that limits treatment, occurring in up to a quarter of patients.



Patient with tension-type headache indicating location of his headache pain

UNANSWERED QUESTIONS

- How do emotional triggers such as such as psychological stress activate the mechanisms of head pain?
- What is different about people who never experience headache?
- What are the specific effects of commonly used non-drug treatments for headache, such as physiotherapy, massage, and exercise?
- When is the optimal time to intervene with preventive treatment for headache?
- What are the mechanisms of medication overuse headache?

METHODS

We searched PubMed using the terms tension-type headache plus randomised controlled trials (173 hits), systematic reviews (17), meta-analyses (14), and Cochrane database (4). We also searched using the term tension-type headache plus pathophysiology (503) and using the terms risk factors plus tension-type headache and systematic reviews (3) or meta-analyses (0). We searched the "epub ahead of print" sections of the specialist journals *Headache* and *Cephalalgia*. The overall quality of evidence varied considerably. It was highest for studies of pathophysiological mechanisms of headache. It was of mixed quality for treatment trials of recently introduced drugs and of low quality for many older drugs and for non-pharmacological treatments (with the exception of biofeedback and some acupuncture studies). Very little evidence of any sort exists on appropriate evaluation, testing strategies, or examination techniques.

The headache benefits of amitriptyline are unlikely to stem from its antidepressant actions as the effective dose is generally lower than the dose needed to treat depression. Additionally, other drugs effective against depression, such as selective serotonin reuptake inhibitors, are not effective for tension-type headache.

Compared with amitriptyline, other preventive treatments for tension-type headache have far less rigorous evidence of benefit. There is modest evidence from randomised controlled trials that tizanidine, an α agonist, is helpful for chronic tension-type headache in doses up to 18 mg a day. Side effects include sedation and dry mouth.[25] One trial showed benefit for mirtazapine 15-30 mg a day.[26] Randomised controlled trials consistently show no benefit for botulinum toxin type A injections into the pericranial muscles.[27]

Clinical experience suggests that side effects are minimised and compliance increased when preventive treatment is started at a low dose and gradually increased until the target dose is reached. A common practice is to increase the dose at weekly intervals. Headaches naturally wax and wane, so two or three months of preventive treatment at the target dose is recommended before outcomes can be judged. A headache diary provides objective confirmation of treatment effects.

The usual goals of treatment are a reduction in the frequency and intensity of headache and improved response to abortive treatment. The optimal duration of preventive treatment is unknown. In the absence of evidence, a reasonable practice is to continue a successful preventive regimen for six months and then slowly reduce the dose while observing headache frequency. Treatment can be resumed if headaches recur.

TIPS FOR NON-SPECIALISTS

- Most patients in general care who present with headache have either migraine or tension-type headache
- The history of headache features is most important in making a diagnosis; with the exception of pericranial muscle tenderness to manual palpation, physical and neurological examinations should yield normal results in patients with tension-type headache or any abnormalities should be explained by other conditions
- If worrisome examination or historical features are present, secondary headache should be excluded with appropriate testing
- If the distinction between migraine, tension-type headache, and other primary headache is not clear, a headache diary can help to clarify the diagnosis
- Some patients with occasional headaches do not need medical treatment. Others need only simple analgesics for acute headaches. Preventive treatment should be considered when acute treatment is ineffective or overused or if headache occurs more than four times a month
- An important responsibility of the physician is to monitor medication intake to prevent overuse
- Patients who regularly use acute medication for headache more than two to three days a week or whose headaches respond poorly to treatment should be referred to a specialist

Education, lifestyle advice, and non-pharmacological treatment

Little evidence exists to support or refute most dietary or lifestyle recommendations made for tension-type headache, so suggestions to alter lifestyle should be made cautiously.

A systematic review found positive effects for participants receiving biofeedback compared with controls in at least three studies for "tension headache/migraine.[28] A systematic review of manual therapies for tension-type headache concluded that no rigorous evidence existed for such therapies having a positive effect in reducing pain or influencing the natural course of tension-type headache.[29] The preponderance of evidence for acupuncture suggests that beneficial effects of this treatment in tension-type headache are small and probably non-specific.

When is referral to a specialist warranted?

Referral to a specialist should be considered for patients whose headache diagnosis is unclear or who do not respond as expected to treatment. Patients whose headaches are complicated by medication overuse may need the close supervision of withdrawal regimens afforded by specialist care.[11] Admission to hospital is rarely necessary. Treatment outcomes are probably improved if patients are referred before medication overuse, daily headache, and expectations of treatment failure have become entrenched.

Specialist headache clinics or treatment units exist in most developed countries, but are difficult to find in less developed areas. Clinicians with a special interest in headache can be found throughout the world, although their training, experience, and medical specialties vary. In the United States, headache medicine is a recognised neurology subspecialty, with certification of practitioners and accreditation of training programmes.

What is the prognosis for tension-type headache?

The prognosis for tension-type headache in the general population is favourable: 45% of adults with frequent or chronic tension-type headache at baseline were in remission when examined three years later, although 39% still had frequent headaches, and 16% had chronic tension-type headache. Poor outcome was associated with the presence of chronic tension-type headache at baseline, coexisting migraine, not being married, and sleep problems. Predictive factors for remission were older age and absence of chronic tension-type

SUMMARY POINTS

Episodic tension-type headache is the most common cause of headache in the general population and is usually self managed

Chronic tension-type headache may be highly disabling and often prompts medical consultation

Diagnosis is clinical, based on widely accepted and validated criteria

Peripheral factors are implicated in episodic tension-type headache, whereas central factors probably underlie chronic tension-type headache

Simple analgesics, especially aspirin, are used for acute treatment

Amitriptyline and biofeedback assisted relaxation training have the best evidence of effectiveness for headache prevention

headache at baseline.[30] The prognosis for patients who need medical intervention or specialist headache care is presumably not so favourable but is difficult to determine because case mix varies considerably from clinic to clinic and country to country.

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ADDITIONAL EDUCATIONAL RESOURCES

Educational materials and information about tension-type headache are available to health professionals and patients from the organisations listed below.

- American Headache Society (www.americanheadachesociety.org/)
- British Association for the Study of Headache (www.bash.org.uk)*
- European Federation of Neurological Societies (www.efns.org)*
- International Headache Society (www.i-h-s.org)
- World Headache Alliance (www.w-h-a.org)

Resources on bmj.com

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* Organisations that have issued consensus guidelines of relevance to tension-type headache

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